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White pine timber supplies.

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WHITE PINE TIMBER SUPPLIES.

LETTER

FROM

THE SECRETARY OF AGRICULTURE,

TRANSMITTING,

IN RESPONSE TO SENATE RESOLUTION OF APRIL 14, 1897, A
STATEMENT PREPARED BY THE CHIEF OF THE DIVISION OF
FORESTRY REGARDING WHITE PINE TIMBER SUPPLIES.

APRIL 19, 1897.—Referred to the Committee on Finance and ordered to be printed.

DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D. C., April 15, 1897.

SIR: Pursuant to the resolution of your honorable body, dated April 14, 1897, asking for information regarding white-pine timber supplies, I have the honor to transmit a statement prepared under my direction by the chief of the division of forestry, which will conform at least with the spirit of the resolution.

I regret that the information at hand does not permit of a more concise statement of this important question, but believe that the statement contains the closest possible approximation to actual facts and furnishes a striking argument for the need of rational forest management.

Respectfully,

JAMES WILSON,
Secretary.

The PRESIDENT OF THE SENATE.

REPORT ON THE PROBABLE AMOUNTS OF WHITE PINE AND OTHER
CONIFEROUS TIMBER STANDING AND ITS CONSUMPTION IN THE
UNITED STATES.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF FORESTRY,
Washington, D. C., April 15, 1897.

There are no statistics of timber standing in the United States available which can claim to be accurate in any mathematical sense, nor

would it be possible to ascertain such, if for no other reason than that the methods of utilization, which are largely dependent on changes of local and market conditions, change the amounts of material considered merchantable, harvested, or sawed from a given forest growth, the conception of what constitutes merchantable timber varying.

In the following statement, therefore, only a general survey of the reported facts has been attempted for the purpose of making clear the situation regarding the supply and consumption of coniferous wood in the United States. In this the more or less partial estimates of disinterested parties, combined with a professional knowledge of possibilities or probabilities, have been utilized for an approximation to the truth—a statement of probabilities rather than actualities.

Ever since the publication of the statistics of the Tenth Census regarding the white pine timber standing—nearly fifteen years—there has been a contention as to their correctness. Time has proven their extreme inaccuracy, for, while then only eight years' supply was supposed to be standing, when the annual cut was 10 billion feet, we have, with an increased cut, lumbered white pine for sixteen years and still there is a considerable quantity left.

Yet, at last, the end is visible, and even the most sanguine can not longer hide the truth that within the next decade we shall witness the practical exhaustion of this greatest staple of our lumber market.

As stated before, even now there are really no statistics upon which to base a correct prognostication as to the date of this exhaustion. Estimates only are available, and estimates of standing timber are proverbially unreliable, mostly underestimates, and always to be taken with caution. Furthermore, if an estimate of the duration of supplies of a special kind is to be made, it is necessary not only to know the supplies and the present cut but also to foresee the changes in the cut, the replacement in the market by other kinds, and the economies that may be practiced in the methods of logging, as, for instance, by the reduction in the size acceptable for saw logs, by cutting smaller trees, by the use of band saws, and by closer utilization generally, whereby the duration of supplies can be lengthened.

Thus, while the estimates of the Tenth Census were based on a minimum log of, say, 10 or even 12 inches diameter, in the present practice 8-inch and even 5-inch logs are used; while in 1880 hemlock went begging and whitewood had not yet been found to answer as a good substitute for white pine, and Southern pine had not yet begun to compete, the interchangeableness of all these species in the market now renders the forecast still more complicated.

Nevertheless, it has become apparent that while white pine will be cut in the United States for many decades, as owners of the stumpage control their holdings, the enormous amounts which have hitherto been cut annually can not be had beyond the next five or six years, even with Canada to help in eking out our deficiencies.

CONSUMPTION.

From the statistics of the cut since 1873, compiled by the Northwestern Lumberman (see Appendix 1), it appears that since that year the stupendous amount of 154 billion feet, B. M., and 83 billion shingles, or altogether in round numbers 165 billion feet of white pine has been cut in the States of Michigan, Wisconsin, and Minnesota; and this total may be readily increased, by allowing for cuts in other parts of the country, to over 200 billion feet, B. M., which this single species has yielded



to build up our civilization in the last eighteen years, an amount to produce which continuously at least 20,000,000 acres of well-stocked and well-kept pine forest would be required.

Divided for convenience and comparison into six-year periods, the cut in the Northwest appears to have been as follows, according to the source cited:

White pine sawed by mills of Michigan, Wisconsin, and Minnesota.

[In billion feet, B. M., round numbers.]

	1873-1878.	1879-1884.	1885-1890.	1891-1896.
Lumber.....	23	40	48	44
Shingles (1,000 = 100 feet, B. M.).....	2	3	3	2
	25	43	51	46

A total of 165 billion feet, B. M.

From 1873, when the cut was about 4 billion feet, the draft on this resource was constantly increased until 1892, when it reached its maximum, nearly 9 billion feet, B. M., and $4\frac{1}{2}$ billion shingles. Then a gradual decline began to $7\frac{3}{4}$ billion feet in 1893, $6\frac{3}{4}$ billion feet in 1894, rising once more to over 7 billion in 1895, and reaching the lowest output in 1896, with $5\frac{1}{2}$ billion feet; shingle production declining similarly to $1\frac{1}{2}$ billion, which, translated into board measure, raises the requirements for that year to little less than $7\frac{1}{2}$ billion feet. This decline does not necessarily indicate any giving out of the supply, but might have been due, and probably was due, to business depression generally and to the competition of other kinds of lumber and shingles.

The total output of white pine in 1890, before the maximum was reached and when the cut of the Northwest was recorded for lumber and shingles as a little over 9 billion feet, was placed by the competent agent of the Eleventh Census, in charge of the statistics of lumber manufacture, at 11.3 billion feet of white pine and Norway pine, or about 25 per cent as coming from other regions, while hemlock, spruce, and fir were estimated as furnishing 7.9 billion feet, so that our requirements of these classes of timber may for ordinary years be placed in round numbers at 20 billion feet.

In discussing the question of duration of supplies it can, as stated before, be reasonably done only by considering at the same time all supplies of a similar nature, namely of the white pine, Norway pine, spruce, and hemlock at least, which can be and are used more or less interchangeably, and will be still more so in the future, to meet our immense requirements for this class of material. That these requirements are not to remain stationary, but have a tendency to increase, may be seen from the development of the wood-pulp industry.

While in 1881 the daily capacity of wood-pulp mills was less than 750,000 pounds, it had more than doubled in 1887, and then increased steadily, doubling almost every three or four years, as follows:

	Pounds.		Pounds.
1887.....	1, 687, 900	1892.....	5, 136, 300
1888.....	2, 153, 500	1893.....	6, 495, 400
1889.....	3, 474, 100	1894.....	7, 231, 900
1890.....	4, 012, 200	1895.....	9, 027, 000
1891.....	4, 497, 200		

This last figure may be conservatively estimated to correspond to an annual consumption of probably 800,000,000 feet, B. M., of material.

There was imported from 1891 to 1896 wood pulp to the value of \$10,337,659, as follows:

1891	\$1, 902, 689
1892	1, 820, 143
1893	2, 908, 884
1894	1, 664, 547
1895	984, 692
1896	1, 056, 704
Total	10, 337, 659

SUPPLIES.

While the above figure of 20 billion feet, B. M., gives a fair idea as to average consumption, which may vary perhaps by 10 per cent one way or the other, we are much less certain as to supplies standing.

For Minnesota the chief fire warden of the State has attempted a canvass (see Appendix 2), the result of which would indicate nearly 18 billion feet as standing in the State, including Norway pine, the estimate having been made for 1895. This has been criticised by competent judges as much too high; nevertheless, adding the estimates of all other kinds of coniferous wood, some of which as yet remains unused, it is thought that a statement in round numbers of 20 billion feet of coniferous wood in Minnesota fit for lumbering, though large, would be reasonably enough near the truth for our purposes in forecasting the probabilities.

For Wisconsin official data are entirely lacking; an estimate of 10 billion as the maximum stand of white pine and Norway pine has been made by a competent lumberman. (See Appendix 3.) As there is considerable hemlock and other coniferous wood in the State, and as it is preferable to overstate, we may treble this amount and take 30 billion feet, a probable overstatement of 50 per cent, as the maximum amount of coniferous timber fit for lumbering standing in the State.

For Michigan a canvass from township to township has been made by the commissioner of labor of the State for 1896 (see Appendix 4), which develops an area of $2\frac{1}{4}$ million acres in pine and hemlock.

If the average stand per acre, which the census of 1890 showed as 6,000 feet for white pine, is applied to the whole area, the amount of timber standing would be 15 billion feet, which, for safety, we may increase by 20 per cent, or say 18 billion feet, of which 6 billion would be white pine. This, too, is supposed to overstate the conditions by 50 per cent.

For Pennsylvania the partial returns of the commissioner of forestry would make an estimate of 10 billion feet pine and hemlock appear highly extravagant. In a private communication he estimates the standing timber of white pine at 500 million, of spruce at 70 million, and of hemlock at 5,000 million feet, B. M.

For New York, without much basis, 5 billion may be allowed as an extravagant figure, with a cut of not less than 500 million feet; another 3 billion for New Hampshire; and, with a closer estimate, based on figures given by the forest commissioner of Maine, that State may be given at best not to exceed 10 billion feet of spruce, pine, and hemlock.

It is well known that in the "Pine Tree" State the white pine is long since reduced to a small proportion of the coniferous wood standing.

The spruce country is confined to the elevated northern half of the State, north of a line from the White Mountains to Mars Hill, with a spruce-bearing area of probably less than 6,000 square miles. The stand on the two main spruce-producing drainage basins, the Kennebec and Androscoggin, has been estimated at round 5,000 million feet, B. M., with a present cut of round 350 million feet. Partial statistics of the cut are given in Appendix 5, which would indicate a total cut of coniferous woods in Maine of not far from 500 million feet in 1895 and preceding years.

In all these estimates of standing timber the writer has leaned toward extravagance rather than understatement, and thus the total is found to add up 100 billion feet of coniferous growth in the Northern States, of which less than half is pine, to satisfy a cut of at least 18 to 20 billion feet per annum.

The writer does not say that in less than six years every stick of pine, spruce, and hemlock will be cut, for such figures as these do not admit of mathematical deductions, but the gravity of the question of supply is certainly apparent. Even doubling the estimates, it is found that, with the present rate and method of cutting, ten years must have exhausted our virgin timber of these classes. We should add that much more intimate knowledge exists now regarding these supplies than was possible in 1880, when much of the country was still unopened and unknown.

OTHER SUPPLIES.

The Southern pines, to be sure, will enter more largely into competition, as also the cypress and other coniferous woods of the South.

The entire region within which pines occur in the South in merchantable condition comprises about 230,000 square miles, or, in round numbers, 147,000,000 acres; for land in farms, 10 million acres must be deducted, and allowing as much as two-thirds of the remainder as representing pine lands (the other to hard woods), we would have about 90 million acres on which pine may occur. An average growth of 3,000 feet per acre—an extravagant figure when referred to such an area—would make the possible stand 270 billion feet, provided it was in virgin condition and not largely cut out or culled. Altogether, the writer has reached the conclusion that, adding all other coniferous wood in the South, an estimate of 300 billion feet would be extravagant, which, added to the Northern supply of coniferous wood, gives a total supply of 400 billion feet to draw from in the Eastern United States; and as the entire cut of these classes of wood appears now to be not less than 25 billion feet a year, and probably is nearer 30 billion, it may be stated with some degree of certainty that not fifteen to twenty years' supply of coniferous timber can be on hand in the Eastern States.

In 1886 the writer ventured a statement that there was 600 billion feet of coniferous growth in the Eastern States; the cut was then estimated at 12 billion feet. If an average cut of 20 billion for the last ten years be allowed, which is reasonable, the present estimate of 400 billion standing would lend color to the approximate correctness of these figures.

If the inquiry is extended to the coniferous growth of the Pacific Coast, which in spite of the distance must finally come to our aid, only partial comfort will be found. The writer's estimate of 1,000 billion feet standing has been by competent judges declared extravagant. The annual cut on the Pacific Coast approaches certainly 4 billion feet,

hence, adding these figures to those obtained for the East, with 1,400 billion feet standing at best, and a cut of at least 30 billion feet per annum, there would appear to be, under most favorable contingencies, not more than forty to fifty years of this most necessary part of our wood supply in sight if the same lavishness in the use of it is continued.

To be sure, there is some new growth and reproduction going on. The probability as to the former is that decay and destruction by fire offsets the accretion on the old timber of coniferous growth, and no one familiar with our forest conditions and present methods will indulge in a hope that the reproduction and young growth can materially change the results. Long before any new reproduction can have attained log size we will have got rid of the virgin supplies.

ECONOMY.

There is, then, only the possible alternative of supplying ourselves from other countries, or of curtailing our cut. In this latter regard the possibility is large. Not only can a much closer utilization of the standing timber be practiced, but a more economical use of the same is reasonably to be expected.

As will appear from the figures given, this country consumes of coniferous wood somewhat over 400 feet, B. M., per capita, while England, which probably has the lowest per capita consumption of wood among civilized nations, being almost entirely dependent upon importation, is able to get along with one-third that amount, and Germany's consumption remains below 150 feet, B. M., per capita of all kinds of sizeable wood. The margin within which, therefore, we can curtail our requirement is large enough to lengthen out our supplies considerably.

CANADIAN SUPPLIES.

As to importations, there is practically only one country from which such timber can be obtained—Canada.

The statistician of the department of agriculture of the Dominion of Canada in 1895 estimated the white pine standing at 37.3 billion feet, with an annual cut of nearly 2 billion feet, including spars, masts, shingles, etc., which, as will readily be seen, can not materially change the position stated before, namely, that the next decade must witness the practical exhaustion of this greatest lumber staple. Even allowing 10 billion feet of merchantable spruce, which may be found in New Brunswick and Nova Scotia, such allowance can not appreciably retard this exhaustion, since the total annual cut of Canadian coniferous wood exceeds 5 billion feet. Fifty per cent may be readily added to the estimates of standing timber in eastern Canada, thus assuming 75 billion feet as on hand, and still Canada's cut alone will exhaust her resources in fifteen years, and this country will assist her to get rid of it in less time.

So far the importations from Canada, although rapidly increasing, have been insignificant when compared with our home consumption. The importations of all kinds of forest products and wood manufactures have been hardly over 1 per cent of our own production, and, if we confine the inquiry to coniferous material only, the proportion of the importation of this class of materials rises to hardly 5 per cent of our home production of the same kinds.

The two tables following, taken from the statements of the United States Bureau of Statistics, show the trade relations of the two countries as regards these classes of imports from one country to the other.

Value of imports of wood and wood manufactures from Canada to the United States.

[United States Bureau of Statistics.]

From—	1892.	1893.	1894.	1895.	1896.
Nova Scotia and New Brunswick:					
Free.....	\$413, 536	\$340, 680	\$334, 267	\$1, 972, 885	\$2, 762, 630
Dutiable.....	742, 875	888, 789	658, 806	179, 489	85, 056
Quebec and Ontario:					
Free.....	1, 640, 804	2, 642, 094	3, 415, 403	9, 240, 665	11, 700, 851
Dutiable.....	9, 012, 215	9, 974, 274	7, 735, 856	950, 778	19, 969
British Columbia.....				108, 179	133, 148
Total.....	11, 809, 430	13, 845, 837	12, 144, 332	12, 451, 996	14, 701, 694

Value of imports of wood and wood manufactures from the United States to Canada.

[United States Bureau of Statistics.]

To—	1892.	1893.	1894.	1895.	1896.
Nova Scotia and New Brunswick.....	\$115, 110	\$92, 208	\$208, 737	\$190, 196	\$216, 977
Quebec and Ontario.....	1, 746, 867	1, 990, 831	2, 740, 868	2, 416, 728	2, 723, 459
British Columbia.....	100, 743	100, 012	111, 914	146, 423	152, 079
Total.....	1, 962, 720	2, 183, 051	3, 061, 519	2, 753, 347	3, 092, 515

Exports of coniferous products from Canada to United States.

[In millions of feet, B. M., rounded off.]

Coniferous products.	1877-1882.	1883-1888.	1889-1894.	1892.	1893.	1894.	1895.	1896.
Logs:	6 years.	6 years.	6 years.					
Hemlock.....	5.5	9.5	20.0	5.0	5.9	5.2	2.2	4.8
Spruce.....	9.0	26.6	86.9	23.0	21.0	17.9	25.0	15.2
Pine.....	2.2	4.6	504.5	74.0	127.0	277.9	212.2	157.7
Total logs.....	16.7	40.7	611.4	102.0	153.9	301.0	239.4	177.7
Lumber:								
Deals.....	31.5	108.7	204.5	53.0	51.0	42.5	44.2	48.8
Laths.....	43.5	64.8	250.7	38.7	39.4	42.8	44.0	52.3
Boards, scantling, etc.	965.8	1, 132.9	3, 098.1	651.4	759.1	1, 018.3	549.5	720.5
Masts, spars, and other	1.4	.8	.7	.2				
Shingles.....	14.9	21.8	132.2	33.4	40.3	36.5	65.8	45.7
Timbers.....	3.9	1.6	165.5					
Pulpwood blocks.....	(a)	(a)	(a)	30.0	62.0	61.5	76.3	100.0
Total manufactured wood.....	1, 061.0	1, 330.6	3, 851.7	806.7	1, 001.8	1, 201.6	779.8	967.3
Total coniferous products.....	1, 077.7	1, 371.3	4, 463.1	908.7	1, 155.7	1, 502.6	1, 019.2	1, 145.0

a Too small to be stated in millions of feet, B. M.

To arrive at an idea of the extent to which we have so far drawn on our neighbors for coniferous supplies, an attempt has been made in the following table to segregate from the trade and navigation reports of the Dominion of Canada those items which have reference to this discussion, translating into board measure approximately the returns given in other measures. These figures are probably somewhat below the

truth, but are sufficiently accurate for the present purpose, and are, moreover, the only ones available:

Logs imported from Canada.

	Pine logs.			Spruce logs.			Hemlock logs.		
	Quantity, M feet.	Value.	Price per M feet.	Quantity, M feet.	Value.	Price per M feet.	Quantity, M feet.	Value.	Price per M feet.
1884	974	\$8,012	\$8.23	6,820	\$31,793	\$4.66	4,818	\$19,168	\$3.98
1885	380	2,300	6.05	11,165	49,449	4.43	3,629	14,752	4.07
1886	2,869	24,452	8.52	17,541	81,874	4.67	6,831	28,076	4.08
1887	6,350	49,242	7.75	17,526	88,773	5.65	4,206	17,447	4.15
1888	468	3,875	8.28	20,714	99,450	4.80	4,512	18,383	4.07
1889	10,839	94,287	8.70	20,360	137,298	6.74	6,420	24,261	3.78
1890	32,144	261,626	8.14	26,073	156,898	6.02	2,952	12,288	4.17
1891	36,699	313,281	8.54	28,494	158,334	5.56	2,210	9,802	4.44
1892	73,963	651,540	8.81	23,404	141,168	6.02	5,057	21,426	4.24
1893	127,084	1,056,355	8.32	21,103	123,254	5.84	5,880	26,036	4.43
1894	277,947	2,359,951	8.49	17,926	107,250	6.00	5,217	19,713	3.77
1895	212,231	1,860,319	8.77	25,095	90,990	3.64	2,217	9,017	4.06
1896	157,400	1,423,489	9.06	15,182	86,075	5.67	4,761	18,607	3.90

It will be seen that each six years' period shows an increase, and that the exports of the last three years were only 25 per cent lower than those of the six preceding years. The largest imports were recorded for 1894, when nearly $1\frac{1}{4}$ billion feet partly manufactured coniferous wood and 300 million feet of logs of conifers were imported. This latter importation increased steadily up to that time, furnishing raw material mainly to our Michigan mills, whose home supply is largely gone.

In the importation of logs it is interesting to observe that they increased in quantity without reference to the existence or absence of the export duty which the Canadian Government imposed in 1886 and abolished in 1891, and the price per M feet also seems uninfluenced. The necessity for these supplies to our mills, especially the mills of the Saginaw (Michigan) district, began to assert itself in 1886, the very year the export duty was imposed to prevent, if possible, these exports of raw material, and has grown constantly, the decline in 1895 and 1896 simply marking the general business depression.

It will be evident from these statements that our virgin coniferous supplies must share the fate which the buffalo has experienced, unless a practical application of rational forestry methods and a more economic use of supplies is presently inaugurated. Since coniferous wood represents two-thirds to three-fourths of our entire lumber wood consumption, and its reproduction requires more care and longer time than that of hard woods, the urgency of changing methods in its use and treatment will be apparent.

APPENDIX 1.

Comparative statement of the white pine lumber product of the Northwest from 1873 to 1896, inclusive.

[Compiled by Northwestern Lumberman.]

Locality.	1896.	1895.	1894.	1893.	1892.
Duluth district.....	364,392,755	473,914,956	367,695,913	398,919,727	441,400,000
St. Croix River.....	166,785,000	297,600,000	173,140,000	162,214,969	198,860,000
Chippewa River.....	206,548,688	278,131,000	265,530,011	292,766,997	316,897,012
Lumber line (C., St. P., M. & O. R. R.).....	148,466,773	212,807,651	178,942,410	237,359,742	266,875,643
Wisconsin River.....					
Mississippi River.....	1,092,746,462	1,544,525,530	1,413,417,811	1,543,012,126	1,761,829,090
Miscellaneous mills—Minnesota.....	114,546,339	74,180,000	85,650,000	37,701,870	37,700,000
Wisconsin Valley Division, Chicago, Milwaukee and St. Paul Rwy.....	181,418,261	249,366,160	329,102,105	362,623,994	464,990,621
Wisconsin Central R. R.....	182,930,831	291,395,544	262,017,145	340,634,126	403,478,121
Milwaukee, Lake Shore and Western Rwy.....	206,115,454	291,035,185	292,063,135	321,597,810	409,700,984
Wolf River.....	47,000,000	66,745,600	66,495,350	67,983,173	68,817,350
Miscellaneous mills—Wisconsin.....	340,435,350	412,261,337	331,554,357	320,782,202	318,291,365
Total, west of Chicago district.....	3,051,445,913	4,101,962,363	3,765,598,237	4,085,596,676	4,688,840,186
Green Bay shore district.....	639,673,224	749,253,796	696,830,466	871,480,222	972,823,418
Cheboygan.....	75,500,000	102,362,000	87,800,000	105,115,684	114,000,000
Manistee.....	211,801,069	250,116,874	261,536,338	239,648,406	297,319,746
Ludington.....	55,306,034	68,212,745	93,765,581	92,345,685	120,557,296
White Lake.....	12,112,000	16,575,000	14,066,000	18,000,000	28,500,000
Muskegon.....	48,249,379	40,907,946	127,510,272	131,286,000	253,716,426
Grand Haven and Spring Lake.....		300,000	500,000	1,000,000	800,000
Miscellaneous mills—Chicago and Lake Superior district..	470,589,855	588,911,194	472,044,975	570,435,791	548,413,965
Total, Chicago district.....	1,513,231,561	1,816,639,555	1,754,053,632	2,029,311,788	2,336,135,851
Chicago and West Michigan Rwy.....	8,489,000	33,746,479	30,677,833	53,318,794	97,820,717
Grand Rapids and Indiana R. R.....	95,843,820	140,163,203	150,832,829	186,840,326	177,811,234
Detroit, Lansing and Northern R. R.....	14,500,000	14,975,000	21,063,000	37,945,000	11,690,000
Flint and Pere Marquette R. R.....	29,470,249	18,444,950	33,021,000	65,494,552	80,692,820
Mackinaw Division, Michigan Central R. R.....	85,270,000	85,609,119	90,701,003	85,811,307	147,269,222
Miscellaneous mills—Michigan.....	154,352,000	196,145,987	175,140,218	142,208,247	133,635,000
Total, railroad and interior mills.....	387,925,069	489,089,738	501,440,883	571,613,226	648,918,993
The Saginaw Valley.....	316,797,879	388,266,202	482,558,546	594,410,676	705,969,027
Lake Huron shore.....	196,787,419	229,545,308	210,614,301	264,067,808	456,048,366
Total, Saginaw district..	513,585,298	617,811,510	693,172,847	858,478,484	1,162,017,393
Lake Erie points.....	71,925,107	67,895,432	48,845,050	54,743,284	66,836,000
Grand total.....	5,538,112,948	7,093,398,598	6,763,110,649	7,599,748,458	8,902,748,423

Comparative statement of the white pine lumber product of the Northwest from 1873 to 1896, inclusive—Continued.

Locality.	1891.	1890.	1889.	1888.	1887.
Duluth district.....	287, 781, 000	243, 252, 488	221, 903, 300	278, 283, 573	243, 450, 068
St. Croix River	190, 717, 450	205, 292, 262	150, 869, 000	187, 648, 238	135, 653, 300
Chippewa River	328, 954, 021	394, 622, 292	305, 415, 348	314, 192, 782	325, 783, 661
Lumber line (C., St. P., M. and O. R. R.)	246, 304, 357	250, 546, 754	251, 462, 430	282, 499, 375	286, 449, 692
Wisconsin River					
Mississippi River	1, 493, 396, 835	1, 582, 907, 021	1, 343, 737, 412	1, 489, 798, 477	1, 262, 778, 448
Miscellaneous mills—Minnesota	46, 900, 000	41, 565, 000	43, 030, 000	48, 458, 747	24, 071, 334
Wisconsin Valley Division, Chicago, Milwaukee and St. Paul Rwy.	351, 452, 502	434, 373, 846	372, 047, 125	342, 154, 712	296, 139, 945
Wisconsin Central Railroad	355, 588, 498	336, 977, 527	292, 359, 359	313, 721, 068	313, 428, 000
Milwaukee, Lake Shore and Western Rwy.	285, 203, 395	283, 269, 308	254, 807, 237	203, 183, 625	183, 751, 300
Wolf River	103, 375, 000	104, 840, 000	109, 463, 941	119, 333, 887	100, 812, 293
Miscellaneous mills—Wisconsin	248, 036, 860	257, 484, 449	249, 272, 808	179, 179, 462	135, 382, 109
Total, west of Chicago district.....	3, 937, 709, 918	4, 135, 130, 947	3, 594, 367, 960	3, 758, 453, 946	3, 307, 700, 150
Green Bay shore district.....	823, 806, 671	881, 355, 513	918, 919, 821	730, 187, 284	672, 669, 330
Cheboygan	87, 800, 000	127, 540, 000	105, 568, 034	96, 600, 000	87, 443, 000
Manistee	278, 097, 201	280, 495, 172	284, 126, 271	262, 830, 261	258, 328, 476
Ludington	146, 909, 748	150, 605, 714	136, 406, 109	130, 681, 881	137, 250, 380
White Lake	24, 785, 000	28, 500, 000	24, 875, 000	64, 250, 000	84, 323, 440
Muskegon	337, 156, 763	433, 960, 553	490, 912, 236	626, 588, 166	665, 449, 921
Grand Haven and Spring Lake	2, 600, 000	32, 668, 392	38, 798, 309	52, 543, 416	52, 000, 000
Miscellaneous mills—Chicago and Lake Superior district..	475, 804, 519	470, 723, 201	481, 752, 576	412, 897, 501	382, 408, 475
Total, Chicago district...	2, 176, 959, 902	2, 405, 848, 545	2, 481, 358, 356	2, 376, 578, 509	2, 339, 873, 022
Chicago and West Michigan Rwy	103, 820, 543	138, 382, 923	146, 479, 116	133, 992, 589	121, 996, 525
Grand Rapids and Indiana R. R.	165, 182, 516	191, 650, 684	230, 830, 778	221, 956, 670	295, 774, 248
Detroit, Lansing and Northern R. R.	20, 453, 793	30, 984, 023	58, 830, 000	96, 118, 721	84, 349, 932
Flint and Pere Marquette R. R.	68, 588, 694	77, 829, 402	78, 208, 644	74, 079, 140	95, 441, 220
Mackinaw Division, Michigan Central R. R.	129, 329, 627	132, 731, 568	145, 767, 101	129, 185, 921	124, 392, 261
Miscellaneous mills—Michigan	70, 535, 100	62, 065, 534	63, 712, 227	44, 939, 824	11, 408, 000
Total, railroad and interior mills	557, 910, 273	633, 644, 134	723, 827, 866	700, 272, 865	733, 362, 136
The Saginaw Valley	762, 901, 386	815, 767, 948	836, 184, 171	876, 300, 087	766, 375, 696
Lake Huron shore	437, 655, 533	597, 863, 141	601, 594, 924	621, 689, 053	555, 855, 730
Total, Saginaw district..	1, 200, 556, 919	1, 413, 631, 089	1, 437, 779, 095	1, 497, 989, 140	1, 322, 231, 426
Lake Erie points	70, 000, 000	76, 250, 000	63, 500, 000	55, 422, 000	54, 750, 000
Grand total.....	7, 943, 137, 012	8, 664, 504, 715	8, 305, 833, 277	8, 388, 716, 460	7, 757, 916, 784

Comparative statement of the white pine lumber product of the Northwest from 1873 to 1896, inclusive—Continued.

Locality.	1886.	1885.	1884.	1883.	1882.
Duluth district.....	193,387,095	161,850,000	243,967,309	191,093,103	154,528,950
St. Croix River.....	127,603,242	161,531,745	149,686,881	124,464,190	113,453,471
Chippewa River.....	347,492,315	372,956,872	454,544,723	428,852,505	414,994,735
Lumber Line (C., St. P., M. & O. R. R.).....	281,485,131	274,111,604	288,095,526	276,545,180	196,999,934
Wisconsin River.....	1,326,158,802	1,437,889,793	1,414,294,695	1,290,062,690	1,372,319,903
Mississippi River.....					
Miscellaneous mills—Minnesota.....	30,026,000	27,495,000	6,900,000	42,050,000	.....
Wisconsin Valley Division, Chicago, Milwaukee and St. Paul Rwy.....	200,314,613	214,993,817	271,720,795	254,607,810	236,205,388
Wisconsin Central R. R.....	275,272,408	229,225,000	301,993,232	282,000,000	142,220,000
Mil., Lake Shore & Western Ry.....	128,515,211	87,630,000	99,232,878	.....	.....
Wolf River.....	99,033,779	130,900,000	142,672,196	127,251,625	145,438,461
Miscellaneous mills—Wisconsin.....	105,839,571	70,435,146	75,538,531	149,104,690	154,462,954
Total, west of Chicago district.....	3,115,128,167	3,169,018,977	3,448,646,757	3,134,331,793	2,931,924,156
Green Bay Shore district.....	590,740,912	587,067,001	601,804,134	686,644,708	638,020,113
Cheboygan.....	97,500,000	60,447,464	83,200,000	82,000,000	74,451,788
Manistee.....	244,359,885	220,759,776	237,522,675	219,710,682	236,823,385
Ludington.....	115,200,000	85,632,040	98,848,490	128,832,122	136,248,851
White Lake.....	75,347,648	94,576,430	84,261,555	76,750,000	108,328,251
Muskegon.....	620,334,164	543,409,637	639,952,568	646,263,886	643,780,512
Grand Haven and Spring Lake.....	73,663,069	86,250,000	120,617,335	150,946,998	192,706,632
Miscellaneous mills—Chicago and Lake Superior district..	279,698,669	299,078,276	370,063,355	119,921,680	158,012,233
Total, Chicago district....	2,196,844,347	1,977,220,624	2,236,270,112	2,111,070,076	2,188,371,665
Chicago and West Michigan Rwy.....	90,573,762	103,926,889	100,567,700	196,576,368	206,911,000
Grand Rapids and Indiana R. R.....	367,072,251	240,404,203	312,961,877	306,367,900	329,610,668
Detroit, Lansing and Northern R. R.....	106,393,937	116,168,504	126,092,378	129,672,500	102,748,000
Flint and Pere Marquette R. R.....	83,923,610	87,030,475	107,481,946	110,024,786	112,638,562
Mackinaw Division, Michigan Central.....	112,716,447	100,028,930	95,255,374	76,345,788	72,650,000
Miscellaneous mills—Michigan.....	13,675,000	16,082,000	46,673,447	64,413,508	97,851,000
Total, railroad and interior mills.....	774,319,007	663,641,001	789,032,722	883,900,850	922,409,230
The Saginaw Valley.....	784,891,224	725,976,037	978,564,984	961,781,164	1,012,951,211
Lake Huron shore.....	499,685,698	464,937,916	431,268,479	478,070,903	441,966,134
Total, Saginaw district..	1,284,576,922	1,190,913,953	1,409,833,463	1,439,852,067	1,454,917,345
Lake Erie points.....	54,500,000	52,300,000	51,250,000	55,635,000	54,528,380
Grand total.....	7,425,368,443	7,053,094,555	7,935,033,054	7,624,789,786	7,552,150,744

Comparative statement of the white pine lumber product of the Northwest from 1873 to 1896, inclusive—Continued.

Locality.	1881.	1880.	1879.	1878.	1877.
Duluth district.....	87,866,000	36,000,000	28,500,000	10,500,000	.....
St. Croix River.....	124,020,474	111,380,000	84,230,000	61,941,000	53,341,000
Chippewa River.....	380,390,917	350,632,000	243,665,000	154,119,000	157,046,000
Lumber line (C., St. P., M. & O. R. R.).....	.....	.....	.....	.....	.....
Wisconsin River.....	.....	.....	153,747,000	105,809,000	124,923,000
Mississippi River.....	1,153,191,303	923,035,000	688,141,000	480,698,000	506,090,000
Miscellaneous mills—Minnesota.....	.....	.....	.....	.....	.....
Wisconsin Valley Division, Chicago, Milwaukee and St. Paul Ry.....	180,499,000	141,902,000	.....	.....	.....
Wisconsin Central R. R.....	182,493,000	142,236,000	.....	.....	.....
Milwaukee, Lake Shore and Western Rwy.....	.....	.....	.....	.....	.....
Wolf River.....	138,849,000	150,218,000	104,739,000	90,907,000	96,398,000
Miscellaneous mills—Wisconsin.....	208,000,000	226,854,000	270,176,000	120,000,000	135,500,000
Total, west of Chicago district.....	2,459,315,694	2,072,257,000	1,573,198,000	1,023,974,000	1,063,298,000
Green Bay shore district.....	532,387,607	505,756,488	383,723,000	322,336,294	271,879,494
Cheboygan.....	73,090,000	79,173,653	56,000,000	55,500,000	52,500,000
Manistee.....	208,729,054	197,050,311	197,352,000	169,212,932	148,983,152
Ludington.....	123,168,945	118,377,297	111,860,000	120,896,288	105,328,873
White Lake.....	140,010,042	91,451,458	83,150,000	89,617,107	82,420,000
Muskegon.....	661,845,423	581,201,649	504,555,000	355,991,899	327,325,106
Grand Haven and Spring Lake	191,696,077	135,919,658	120,795,000	80,000,000	80,805,871
Miscellaneous mills—Chicago and Lake Superior district..	180,000,000	82,420,492	74,195,000	57,526,239	68,923,000
Total, Chicago district.....	2,110,837,148	1,801,351,006	1,531,540,000	1,251,080,759	1,138,165,496
Chicago and West Michigan Rwy.....	109,210,936	58,380,000	87,804,000	65,000,000	28,750,000
Grand Rapids and Indiana R. R.....	267,940,292	174,785,000	146,503,000	128,508,000	139,129,000
Detroit, Lansing and Northern R. R.....	114,158,080	71,530,000	92,673,000	99,450,000	104,216,000
Flint and Pere Marquette R. R.	130,920,704	92,681,000	80,650,000	59,642,000	75,711,000
Mackinaw Division, Michigan Central R. R.....	84,187,079	68,275,000	95,615,000	93,500,000	143,800,000
Miscellaneous mills—Michigan.....	200,000,000	163,000,000	150,000,000	120,000,000	133,000,000
Total, railroad and interior mills.....	906,417,091	628,651,000	653,245,000	566,100,000	624,606,000
The Saginaw Valley.....	982,329,317	862,453,000	736,106,000	574,163,000	640,166,000
Lake Huron shore.....	313,966,499	286,583,000	312,854,000	214,155,000	129,098,000
Total, Saginaw district.....	1,296,285,816	1,149,036,000	1,048,960,000	788,318,000	769,264,000
Lake Erie points.....	.....	.....	.....	.....	.....
Grand total.....	6,768,856,749	5,651,295,006	4,806,943,000	3,629,472,759	3,595,333,496

Comparative statement of the white pine lumber product of the Northwest from 1873 to 1896, inclusive—Continued.

Locality.	1876.	1875.	1874.	1873.
Duluth district.....				
St. Croix River.....	66,793,000	75,520,000	60,200,000	71,000,000
Chippewa River.....	255,867,000	274,077,000	282,199,000	267,000,000
Lumber line (C., St. P., M. & O. R. R.).....				
Wisconsin River.....	141,700,000	119,600,000	121,600,000	125,000,000
Mississippi River.....	700,819,000	617,397,000	575,443,000	650,000,000
Miscellaneous mills—Minnesota.....				
Wisconsin Valley Division, Chicago, Milwaukee and St. Paul Rwy.....				
Wisconsin Central R. R.....				
Milwaukee, Lake Shore and Western Rwy.....				
Wolf River.....	138,645,000	163,737,000	185,000,000	170,000,000
Miscellaneous mills—Wisconsin.....	145,050,000	110,000,000	85,000,000	70,000,000
Total, west of Chicago district.....	1,448,874,000	1,360,331,000	1,309,442,000	1,353,000,000
Green Bay shore district.....	313,086,000	274,356,000	233,769,000	283,000,000
Cheboygan.....	45,500,000	29,400,000	29,500,000	41,100,000
Manistee.....	146,425,000	160,826,000	152,508,000	183,245,000
Ludington.....	104,724,000	94,800,000	92,225,000	83,670,000
White Lake.....	79,600,000	64,000,000	51,300,000	88,580,000
Muskegon.....	296,334,000	330,400,000	309,200,000	329,689,000
Grand Haven and Spring Lake.....	58,500,000	83,100,000	80,964,000	117,535,000
Miscellaneous mills—Chicago and Lake Superior district.....	74,360,000	84,080,000	94,825,000	100,000,000
Total, Chicago district.....	1,118,529,000	1,120,962,000	1,044,291,000	1,226,819,000
Chicago and West Michigan Rwy.....	37,250,000	56,970,000	40,615,000	50,600,000
Grand Rapids and Indiana R. R.....	126,250,000	147,825,000	112,000,000	130,000,000
Detroit, Lansing and Northern E. R.....	88,350,000	104,950,000	66,700,000	75,400,000
Flint and Pere Marquette R. R.....	71,935,000	82,357,000	89,475,000	55,303,000
Mackinaw Division, Michigan Central R. R.....	141,750,000	155,850,000	114,550,000	50,300,000
Miscellaneous mills—Michigan.....	124,000,000	200,000,000	236,000,000	260,000,000
Total, railroad and interior mills.....	589,535,000	747,952,000	659,340,000	621,603,000
The Saginaw Valley.....	573,958,000	581,558,000	573,633,000	619,867,000
Lake Huron Shore.....	148,150,000	157,750,000	164,600,000	172,491,000
Total, Saginaw district.....	722,108,000	739,308,000	738,233,000	792,358,000
Lake Erie points.....				
Grand total.....	3,879,046,000	3,968,553,000	3,751,306,000	3,993,780,000

Comparative statement of the shingle product of the Northwest from 1873 to 1896, inclusive.

Locality.	1896.	1895.	1894.	1893.	1892.
Duluth district.....	45,383,500	89,501,000	70,234,500	102,120,750	134,226,000
St. Croix River.....	37,532,500	36,822,000	59,717,000	59,455,750	87,839,000
Chippewa River.....	104,211,750	137,604,000	138,575,250	174,567,250	188,243,500
Lumber Line (C., St. P., M. and O. R. R.).....	29,931,000	49,252,500	75,491,750	110,781,000	147,767,250
Wisconsin River.....	284,963,750	408,452,000	424,954,250	545,263,350	746,165,500
Mississippi River.....	14,911,250	11,416,000	18,525,000	11,372,000	4,450,000
Miscellaneous mills—Minne- sota.....	46,801,500	69,129,650	119,504,000	110,701,000	218,764,000
Wisconsin Valley Division, Chicago, Milwaukee and St. Paul Rwy.....	19,583,000	43,181,750	59,420,000	115,794,250	129,589,250
Wisconsin Central R. R.....	43,968,750	97,919,000	152,551,250	169,340,000	290,255,000
Milwaukee, Lake Shore and Western Rwy.....	9,894,000	22,678,750	24,450,000	28,246,000	44,556,000
Wolf River.....	78,224,000	111,202,200	155,630,000	111,667,250	102,263,750
Miscellaneous mills—Wiscon- sin.....					
Total, west of Chicago district.....	715,405,000	1,077,158,850	1,299,053,000	1,539,308,600	2,094,119,250
Green Bay Shore district.....	322,462,000	278,760,500	330,085,250	301,708,750	306,941,400
Cheboygan.....	21,700,000	34,302,000	31,200,000	43,401,000	50,000,000
Manistee.....	217,517,000	259,737,500	245,289,000	269,483,500	345,969,423
Ludington.....	11,601,000	22,859,500	38,848,000	37,668,750	51,322,250
White Lake.....	15,285,000	21,800,000	27,048,000	29,700,000	60,000,000
Muskegon.....	40,676,750	53,825,000	62,252,000	75,953,000	169,392,000
Grand Haven and Spring Lake. Miscellaneous mills—Chicago and Lake Superior district..	136,564,000	149,662,000	160,672,000	215,906,950	204,340,250
Total, Chicago district..	765,805,750	820,946,500	895,394,250	973,821,950	1,187,965,323
Chicago and West Michigan Rwy.....	15,000,000	26,027,750	33,630,500	98,351,500	96,344,000
Grand Rapids and Indiana R.R. Detroit, Lansing and Northern R. R.....	33,103,000	52,535,000	95,985,000	134,722,000	145,451,953
Flint and Pere Marquette R.R. Mackinaw Division, Michigan Central R. R.....	8,900,000	12,350,500	25,457,000	28,460,000	28,325,000
Miscellaneous mills—Michigan	29,000,000	44,250,000	79,733,750	108,099,500	163,876,500
	28,600,000	41,612,750	83,265,000	83,322,750	85,325,000
	132,893,000	226,266,500	325,103,850	235,923,600	189,826,000
Total, railroad and inter- ior mills.....	247,496,000	403,042,500	643,175,100	718,879,350	709,148,453
The Saginaw Valley.....	38,180,750	49,843,000	88,307,250	112,826,000	182,315,250
Lake Huron shore.....	90,017,950	114,377,750	95,753,250	76,333,000	106,447,000
Total, Saginaw district..	128,198,700	164,220,750	184,060,500	189,159,000	288,762,250
Grand total.....	1,856,905,450	2,465,368,600	3,021,682,850	3,421,168,900	4,279,995,276

Comparative statement of the shingle product of the Northwest from 1873 to 1896, inclusive—Continued.

Locality.	1891.	1890.	1889.	1888.	1887.
Duluth district.....	93, 101, 000	85, 682, 500	100, 326, 750	111, 261, 250	84, 496, 000
St. Croix River.....	71, 759, 000	85, 605, 750	64, 925, 250	66, 712, 750	48, 574, 250
Chippewa River.....	182, 171, 500	191, 507, 500	178, 779, 750	159, 020, 000	134, 791, 250
Lumber Line (C., St. P., M. & O. R. R.).....	122, 994, 750	136, 899, 150	142, 133, 250	127, 368, 000	111, 546, 000
Wisconsin River.....					
Mississippi River.....	661, 825, 250	689, 886, 600	710, 491, 800	585, 804, 350	461, 399, 500
Miscellaneous mills—Minne- sota.....	1, 950, 000	6, 900, 000	11, 375, 000	23, 535, 000	17, 088, 000
Wisconsin Valley Division Chicago, Milwaukee and St. Paul Rwy.....	159, 965, 250	194, 693, 000	200, 408, 500	167, 726, 500	126, 776, 500
Wisconsin Central R. R.....	114, 206, 000	144, 981, 900	132, 943, 250	130, 081, 500	152, 223, 500
Milwaukee, Lake Shore and Western Rwy.....	255, 936, 250	226, 551, 750	246, 350, 000	91, 793, 000	89, 914, 000
Wolf River.....	72, 933, 000	80, 181, 000	56, 690, 500	57, 382, 000	57, 592, 000
Miscellaneous mills—Wiscon- sin.....	84, 212, 000	115, 457, 000	122, 886, 750	51, 950, 000	41, 901, 000
Total, west of Chicago district.....	1, 821, 054, 000	1, 958, 346, 150	1, 966, 710, 800	1, 572, 634, 350	1, 326, 302, 000
Green Bay shore district.....	246, 177, 250	349, 101, 250	389, 196, 000	281, 497, 250	242, 832, 250
Cheboygan.....	11, 500, 000	3, 000, 000	8, 500, 000	6, 500, 000	11, 000, 000
Manistee.....	318, 642, 000	404, 378, 500	584, 945, 750	582, 394, 500	433, 131, 750
Ludington.....	90, 991, 250	114, 422, 750	101, 484, 500	97, 630, 000	79, 657, 500
White Lake.....	25, 883, 000	41, 000, 000	42, 000, 000	47, 132, 500	52, 020, 500
Muskegon.....	191, 117, 250	364, 721, 000	347, 201, 750	501, 157, 000	520, 531, 750
Grand Haven and Spring Lake Miscellaneous mills—Chicago and Lake Superior district..	157, 799, 250	174, 490, 000	141, 676, 500	122, 182, 000	113, 808, 000
Total, Chicago district..	1, 042, 110, 000	1, 451, 113, 500	1, 579, 004, 000	1, 642, 493, 250	1, 494, 256, 750
Chicago and West Michigan Rwy.....	77, 594, 000	97, 895, 000	125, 166, 000	117, 431, 000	136, 856, 750
Grand Rapids and Indiana R. R.....	78, 654, 000	93, 172, 000	146, 400, 000	175, 882, 750	298, 208, 000
Detroit, Lansing and Northern R. R.....	85, 674, 750	162, 466, 000	205, 571, 000	331, 420, 500	351, 386, 000
Flint and Pere Marquette R. R. Mackinaw Division Michigan Central R. R.....	129, 625, 000	176, 820, 000	204, 966, 750	206, 764, 250	159, 411, 250
Miscellaneous mills—Michigan	95, 746, 500	132, 891, 000	107, 999, 000	106, 653, 200	63, 500, 000
	119, 183, 250	118, 788, 250	54, 407, 000	24, 169, 000	36, 150, 000
Total, railroad and inter- rior mills.....	586, 477, 500	782, 032, 250	844, 509, 750	962, 320, 700	1, 045, 512, 000
The Saginaw Valley.....	226, 938, 000	221, 345, 600	222, 246, 250	263, 784, 000	196, 983, 000
Lake Huron shore.....	78, 513, 000	72, 987, 000	86, 505, 000	73, 414, 501	53, 413, 000
Total, Saginaw district..	305, 451, 000	294, 332, 600	308, 751, 250	337, 198, 501	250, 396, 000
Grand total.....	3, 755, 092, 500	4, 487, 824, 500	4, 698, 975, 800	4, 514, 646, 801	4, 116, 466, 750

Comparative statement of the shingle product of the Northwest from 1873 to 1896, inclusive—Continued.

Locality.	1886.	1885.	1884.	1883.	1882.
Duluth district.....	64, 370, 500	67, 050, 000	58, 165, 250	49, 767, 000	51, 736, 500
St. Croix River.....	42, 186, 750	51, 527, 250	48, 819, 000	51, 336, 000	64, 059, 250
Chippewa River.....	216, 125, 990	195, 937, 000	192, 382, 500	136, 612, 250	162, 845, 950
Lumber Line (C., St. P., M. and O. R. R.).....	157, 557, 500	146, 688, 000	134, 332, 250	71, 846, 500	55, 837, 000
Wisconsin River.....	520, 594, 250	610, 118, 000	593, 325, 000	538, 252, 000	578, 928, 000
Miscellaneous mills—Minne- sota.....	21, 740, 000	15, 355, 000	950, 000	13, 635, 900	-----
Wisconsin Valley Division, Chicago Milwaukee and St. Paul Rwy.....	109, 458, 500	122, 409, 250	138, 621, 200	163, 091, 250	165, 241, 000
Wisconsin Central R. R.....	140, 645, 750	142, 537, 000	193, 872, 000	216, 958, 000	108, 397, 000
Milwaukee, Lake Shore and Western Rwy.....	83, 040, 000	89, 655, 000	55, 324, 250	-----	-----
Wolf River.....	45, 758, 750	75, 812, 000	108, 871, 750	106, 627, 000	142, 292, 500
Miscellaneous mills—Wiscon- sin.....	45, 278, 500	30, 124, 000	51, 155, 000	73, 528, 000	155, 400, 000
Total west of Chicago district.....	1, 446, 756, 490	1, 547, 212, 500	1, 575, 818, 200	1, 406, 653, 000	1, 484, 719, 200
Green Bay shore district.....	222, 982, 350	246, 478, 000	140, 738, 750	172, 470, 750	139, 223, 333
Cheboygan.....	9, 000, 000	4, 000, 000	3, 000, 000	7, 000, 000	-----
Manistee.....	507, 388, 500	482, 907, 000	610, 334, 050	722, 869, 139	721, 999, 000
Ludington.....	118, 161, 750	55, 567, 000	45, 918, 500	41, 307, 750	84, 091, 250
White Lake.....	50, 653, 000	73, 535, 000	58, 380, 000	39, 555, 000	38, 000, 000
Muskegon.....	458, 100, 000	383, 844, 500	327, 525, 500	225, 529, 000	121, 398, 250
Grand Haven and Spring Lake.	124, 670, 000	97, 527, 250	133, 322, 000	147, 834, 000	57, 000, 000
Miscellaneous mills—Chicago and Lake Superior district ..	135, 081, 000	104, 467, 500	117, 714, 250	83, 940, 000	211, 716, 875
Total, Chicago district ..	1, 625, 986, 600	1, 448, 326, 250	1, 436, 933, 050	1, 440, 505, 639	1, 373, 428, 708
Chicago and West Michigan Rwy.....	116, 017, 000	102, 374, 500	73, 868, 000	134, 077, 000	134, 054, 500
Grand Rapids and Indiana R. R.....	403, 999, 750	244, 248, 000	378, 579, 000	220, 568, 000	267, 927, 000
Detroit Lansing and Northern R. R.....	472, 029, 500	391, 420, 000	497, 567, 000	178, 335, 000	132, 018, 000
Flint and Pere Marquette R. R.	148, 035, 250	206, 608, 000	224, 660, 000	209, 575, 000	253, 417, 000
Mackinaw Division, Michigan Central R. R.....	62, 100, 000	35, 075, 750	2, 650, 000	18, 306, 250	8, 650, 000
Miscellaneous mills—Michigan	12, 150, 000	1, 500, 000	30, 729, 250	53, 807, 500	100, 000, 000
Total, railroad and inter- ior mills.....	1, 214, 331, 500	981, 226, 250	1, 208, 053, 250	814, 668, 750	896, 066, 500
The Saginaw Valley.....	227, 463, 000	227, 739, 750	281, 325, 500	244, 631, 750	278, 514, 000
Lake Huron shore.....	62, 993, 120	53, 469, 000	57, 696, 000	58, 297, 500	61, 549, 250
Total, Saginaw district ..	290, 456, 120	281, 208, 750	339, 021, 500	302, 929, 250	340, 063, 250
Grand total.....	4, 577, 530, 710	4, 257, 973, 750	4, 559, 826, 000	3, 964, 756, 639	4, 095, 277, 658

Comparative statement of the shingle product of the Northwest from 1873 to 1896, inclusive—Continued.

Locality.	1881.	1880.	1879.	1878.	1877.
Duluth district.....	24, 650, 000	7, 500, 000			
St. Croix River.....	71, 887, 000	52, 958, 000	40, 300, 000	35, 595, 000	27, 980, 000
Chippewa River.....	124, 141, 250	87, 926, 000	73, 016, 000	60, 458, 000	55, 448, 000
Lumber line (C., St. P., M. and O. R. R.).....					
Wisconsin River.....			169, 439, 000	144, 450, 000	102, 607, 000
Mississippi River.....	419, 723, 343	289, 658, 000	208, 331, 000	179, 900, 000	242, 865, 000
Miscellaneous mills—Minne- sota.....					
Wisconsin Valley Division, Chicago, Milwaukee, and St. Paul Rwy.....	106, 140, 000	81, 300, 000			
Wisconsin Central R. R.....	108, 834, 000	93, 700, 000			
Milwaukee, Lake Shore and Western Rwy.....					
Wolf River.....	162, 117, 750	144, 411, 000	83, 167, 000	66, 065, 000	100, 736, 000
Miscellaneous mills—Wiscon- sin.....	175, 000, 000	166, 630, 000	200, 000, 000	175, 300, 000	133, 000, 000
Total, west of Chicago district.....	1, 192, 493, 343	924, 083, 000	774, 253, 000	661, 785, 000	662, 636, 000
Green Bay shore district.....	179, 212, 625	189, 561, 000	194, 941, 000	169, 550, 000	156, 375, 000
Cheboygan.....		1, 250, 000	3, 000, 000	2, 500, 000	4, 800, 000
Manistee.....	601, 890, 000	440, 469, 000	366, 684, 000	340, 116, 000	205, 000, 000
Ludington.....	92, 109, 000	56, 707, 000	52, 715, 000	25, 000, 000	20, 000, 000
White Lake.....	36, 088, 000	47, 245, 000	65, 400, 000	55, 000, 000	51, 000, 000
Muskegon.....	89, 000, 000	58, 003, 000	36, 000, 000	16, 000, 000	36, 000, 000
Grand Haven and Spring Lake. Miscellaneous mills—Chicago and Lake Superior district.....	175, 000, 000	168, 000, 000	118, 000, 000	110, 000, 000	68, 000, 000
	85, 000, 000	45, 881, 000	61, 775, 000	60, 000, 000	50, 000, 000
Total, Chicago district..	1, 258, 299, 625	1, 007, 116, 000	898, 515, 000	778, 166, 000	585, 175, 000
Chicago and West Michigan Rwy.....	100, 000, 000	66, 292, 000	75, 277, 000	71, 000, 000	65, 500, 000
Grand Rapids and Indiana R. R.....	167, 842, 286	186, 581, 000	274, 869, 000	192, 900, 000	328, 460, 000
Detroit, Lansing and North- ern R. R.....	157, 659, 000	97, 049, 000	119, 314, 000	133, 300, 000	298, 184, 000
Flint and Pere Marquette R. R. Mackinaw Division, Michigan Central R. R.....	212, 814, 313	152, 350, 000	90, 275, 000	133, 450, 000	166, 030, 000
	30, 000, 000	40, 428, 000	81, 875, 000	100, 500, 000	144, 000, 000
Miscellaneous mills—Michigan	80, 000, 000	200, 000, 000	250, 000, 000	275, 000, 000	225, 000, 000
Total, railroad and inter- ior mills.....	748, 315, 599	742, 700, 000	891, 610, 000	906, 150, 000	1, 227, 174, 000
The Saginaw Valley.....	304, 025, 500	241, 075, 160	218, 934, 750	153, 989, 750	167, 971, 755
Lake Huron shore.....	42, 872, 750	57, 938, 000	75, 800, 000	61, 400, 000	53, 900, 000
Total, Saginaw district..	346, 898, 250	299, 013, 160	294, 734, 750	215, 389, 750	221, 871, 755
Grand total.....	3, 546, 006, 817	2, 972, 912, 160	2, 859, 112, 750	2, 561, 490, 750	2, 696, 856, 755

Comparative statement of the shingle product of the Northwest from 1873 to 1896, inclusive—Continued.

Locality.	1876.	1875.	1874.	1873.
Duluth district.....				
St. Croix River	30, 195, 000	51, 525, 000	23, 900, 000	35, 000, 000
Chippewa River	79, 250, 000	72, 500, 000	63, 000, 000	65, 000, 000
Lumber Line (C., St. P., M. & O. R. R.)				
Wisconsin River	106, 250, 000	77, 150, 000	45, 025, 000	53, 800, 000
Mississippi River	313, 172, 000	338, 903, 000	318, 052, 000	299, 650, 000
Miscellaneous mills—Minnesota				
Wisconsin Valley Division, Chicago,				
Milwaukee and St. Paul Rwy.....				
Wisconsin Central R. R.....	132, 700, 000	84, 000, 000	22, 000, 000	
Milwaukee, Lake Shore and Western				
Rwy				
Wolf River	123, 192, 000	150, 225, 000	164, 650, 000	168, 480, 000
Miscellaneous mills—Wisconsin.....	48, 400, 000	37, 500, 000	52, 000, 000	46, 860, 000
Total, west of Chicago district.....	833, 159, 000	811, 803, 000	688, 627, 000	668, 790, 000
Green Bay Shore district.....	107, 200, 000	63, 200, 000	126, 300, 000	108, 450, 000
Cheboygan	9, 000, 000	8, 500, 000	8, 000, 000	7, 900, 000
Manistee	189, 000, 000	148, 500, 000	129, 500, 000	120, 000, 000
Ludington	18, 000, 000	16, 115, 000	15, 000, 000	8, 000, 000
White Lake	61, 000, 000	20, 000, 000	30, 000, 000	29, 500, 000
Muskegon	32, 000, 000	28, 100, 000	26, 000, 000	22, 750, 000
Grand Haven and Spring Lake.....	45, 000, 000	40, 000, 000	38, 000, 000	36, 000, 500
Miscellaneous mills—Chicago and				
Lake Superior district.....	48, 000, 000	46, 000, 000	52, 000, 000	60, 000, 000
Total, Chicago district.....	509, 200, 000	370, 315, 000	424, 800, 000	393, 100, 000
Chicago and West Michigan Rwy	149, 375, 000	101, 485, 000	106, 000, 000	80, 000, 000
Grand Rapids and Indiana R. R.....	219, 250, 000	206, 400, 000	249, 000, 000	200, 000, 000
Detroit, Lansing, and Northern R. R.	189, 450, 000	158, 148, 000	100, 000, 000	90, 000, 000
Flint and Pere Marquette R. R.....	146, 300, 000	161, 800, 000	118, 500, 000	120, 699, 000
Mackinaw Division, Michigan Central				
R. R	221, 450, 000	114, 487, 000	92, 800, 000	15, 100, 000
Miscellaneous mills—Michigan	350, 000, 000	300, 000, 000	400, 000, 000	400, 000, 000
Total, railroad and interior				
mills	1, 275, 825, 000	1, 042, 320, 000	1, 066, 300, 000	905, 799, 000
The Saginaw Valley	204, 346, 725	224, 030, 240	208, 489, 555	218, 394, 550
Lake Huron Shore	78, 000, 000	67, 350, 000	85, 000, 000	91, 350, 000
Total, Saginaw district	282, 346, 725	291, 400, 240	293, 489, 555	309, 744, 550
Grand total.....	2, 900, 530, 725	2, 515, 838, 240	2, 473, 216, 555	2, 277, 433, 550

APPENDIX 2.

Summary of estimates of coniferous wood standing in Minnesota, 1896.

[Compiled from report of State chief fire warden.]

[Feet, B. M.]

County.	White pine, mil- lion.	Norway pine, mil- lion.	Jack pine, mil- lion.	Spruce, million.	Cedar, million.	Tama- rack, mil- lion.
Aitkin.....	375	75				
Becker.....	120	60		(a)		
Beltrami.....	1,500	350		(a)		(a)
Benton.....	1					
Cass.....	1.6	0.4				
Carlton.....	550	100		(a)	10	
Cook.....	800	150		200	200	
Crow Wing.....	25	5	10			
Douglas.....				(a)		
Hubbard.....	450	300	50	10		
Isanti.....	0.2					
Itasca.....	2,200	550	30	100	100	50
Kanabec.....	150					
Lake.....	1,500	200	50	200	400	150
Millelacs.....	500	40				(a)
Morrison.....	18	7				
Ottertail.....	2	0.4		(a)		
Pine.....	800	300				(a)
Roseau.....	450	150		100		(a)
St. Louis.....	3,200	700	400	450	300	400
Todd.....	2	0.075				(a)
Wadena.....	6	30	100			
Total.....	12,650	3,017.875	640	1,060	1,010	600
The summary given by the chief fire warden is as follows.....	14,424	3,412	640	1,050	1,010	450

a Small amounts reported.

APPENDIX 3.

Estimates of white pine standing in State of Wisconsin, 1895.

County.	Feet, B. M.	County.	Feet, B. M.
Ashland.....	400,000,000	Portage*.....	Small amounts.
Barron*.....	Small amounts.	Price.....	400,000,000
Bayfield.....	1,700,000,000	Sawyer.....	500,000,000
Burnett*.....	Small amounts.	Shawano*.....	Small amounts.
Chippewa*.....	do	Taylor.....	400,000,000
Clark*.....	do	Vilas.....	400,000,000
Douglas.....	1,300,000,000	Washburn.....	300,000,000
Florence.....	400,000,000	Wood*.....	Small amounts.
Forest.....	900,000,000		
Iron.....	200,000,000		
Langlade.....	200,000,000		
Lincoln.....	600,000,000	Allowance for starred (*) counties	9,200,000,000
Marathon*.....	Small amounts.		800,000,000
Marinette.....	700,000,000		10,000,000,000
Oconto.....	200,000,000	Probable cut since 1895.....	2,000,000,000
Oneida.....	600,000,000	Timber standing.....	8,000,000,000

Total assessment valuation of the counties, estimated, for 1895..... \$21,513,227
 Farm property, according to census 1895, 1,111,546 acres, valuation..... 6,208,645

Balance assessment on woodlands, round numbers..... 15,000,000

WHITE PINE TIMBER SUPPLIES.

APPENDIX 4.

Coniferous timber standing in Michigan, 1897.

[Compiled from fourteenth annual report of the State commissioner of labor.]

County.	Number acres of standing pine in county.	Number acres of standing hemlock in county.	County.	Number acres of standing pine in county.	Number acres of standing hemlock in county.
Alcona	1,640	13,620	Livingston	4	12,000
Alger	22,800	46,064	Luce	5,000	58,700
Allegan	82	70	Mackinac	10,563	5
Alpena	80	15,440	Macomb	5	12,813
Antrim	5,800	12,539	Manistee	6,527	90,006
Arenac	160	2,677	Marquette	83,690	4,360
Baraga	61,000	117,000	Mason	13,912	13,527
Bay		9,720	Mecosta	10	65,090
Benzie	1,950	3,540	Menominee	19,890	720
Berrien	230	320	Midland		21,280
Calhoun	1		Missaukee	10,912	750
Cass		200	Montcalm	120	15,330
Charlevoix	2,835	10,934	Montmorency	12,780	470
Cheboygan	7,595	33,446	Muskegon	355	2,221
Chippewa	69,940	119,570	Newaygo	2,665	20
Clare	440	6,880	Oakland	20	6,437
Crawford	13,000	1,300	Oceana	73	6,105
Delta	39,021	111,408	Ogemaw	3,750	207,160
Dickinson	23,780	12,100	Ontonagon	63,280	12,158
Emmet	1,540	26,160	Oscoda	1,120	4,000
Genesee	225		Oscoda	21,706	6,965
Gladwin	3,160	15,740	Otsego	17,266	1,600
Gogebic	32,800	47,000	Ottawa	20	27,981
Grand Traverse	4,369	9,032	Presque Isle	9,086	12,440
Gratiot	30		Roscommon	4,920	2,103
Houghton	41,750	66,180	Saginaw	2,103	10
Huron	430	90	Sanilac	10	105,218
Ionia	20		Schoolcraft	61,367	
Iosco	2,700	6,060	Shiawassee		700
Iron	31,860	26,400	St. Clair	700	105
Isabella	1	7,680	Tuscola	105	20
Kalkaska	28,759	21,635	Van Buren	20	3,700
Kent	471	1,000	Wexford	3,700	
Keweenaw	9,888	15,080			
Lake	9,052	2,635	Total	775,208	1,468,166
Lapeer	120	55			
Leelanau		6,900			

APPENDIX 5.

Coniferous lumber cut in Maine since 1872.

KENNEBEC RIVER AND AFFLUENTS.

[Compiled from books of log-driving companies.]

Year.	Million feet B. M.	Year.	Million feet B. M.
1872	153.9	1884	179.2
1873	178.6	1885	182.5
1874	121.1	1886	214.7
1875	124.8	1887	165.4
1876	153.8	1888	213.4
1877	62.1	1889	227.5
1878	118	1890	242.1
1879	131.4	1891	226.2
1880	141.3	1892	224.9
1881	238.9	1893	271
1882	209.1	1894	174
1883	206.2	1895	165.7

Coniferous lumber cut in Maine since 1872—Continued.

PENOBSCOT RIVER.

[In millions of feet, B. M. From books of surveyor-general.]

Year.	Pine.	Spruce.	Hemlock, etc. <i>a</i>	Total.	Year.	Pine.	Spruce.	Hemlock, etc. <i>a</i>	Total.
1872	46.2	176.9	23.4	246.5	1884	24.7	84.4	16.2	125.3
1873	32.6	129.3	17.3	179.2	1885	30.5	94.4	17.9	142.8
1874	24.2	135.2	17.4	176.8	1886	28.6	100.9	17.1	146.6
1875	22.3	116.7	15.7	154.7	1887	29.1	102.7	17.8	149.6
1876	19.6	82.1	13.4	115.1	1888	30.9	114.3	19.5	164.7
1877	14.7	85.5	17.7	117.9	1889	27.9	121.7	20.7	170.3
1878	19.5	81.4	21.3	122.2	1890	28.3	129.5	21.3	179.1
1879	17.9	92.0	12.7	122.6	1891	23.1	118.2	23.7	165.0
1880	17.7	91.6	14.2	123.5	1892	26.9	105.0	28.5	160.4
1881	33.7	104.7	15.9	154.3	1893	22.4	81.4	21.4	129.2
1882	33.4	122.5	16.2	172.1	1894	25.4	117.0	19	161.4
1883	26.5	115.3	19.4	161.2	1895	27.2	91.5	25.5	144.2

a Including probably hard woods.

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